WHAT IS CLAIMED IS:

1   1.   A method for dynamic latency management in a real-time electronic communication

2   comprising:

3   measuring a communication delay arising from a receiving data buffer;

4   determining a latency adjustment necessary to adjust the size of the communication

5   delay to within a predetermined range;

6   determining an optimal range for a size of the communication delay based on the

7   measured communication delay; and

8   modifying a number of samples of a playback data block passing through the

9   receiving data buffer based on the measured communication delay and on the optimal range

10   for the size of the communication delay.

1   2.   The method of claim 1 wherein the number of samples is modified without

2   introducing audible artifacts.

1   3.   The method of claim 1 wherein measuring the communication delay comprises

2   measuring an instantaneous communication delay associated with the receiving data buffer.

1   4.   The method of claim 3 wherein measuring the communication delay comprises:

2   measuring the instantaneous communication delay associated with the receiving data

3   buffer two or more times; and

4   averaging the measurements.

1   5.   The method of claim 1 wherein the real-time electronic communication includes an

2   audio communication.

1   6.   The method of claim 1 further comprising determining receiving data buffer delay

2   upper and lower bounds.

1   7.   The method of claim 1 wherein modifying the number of samples comprises

2   performing heuristic resampling of a playback block.

1   8.   The method of claim 7 wherein performing heuristic resampling comprises:

2   analyzing multiple consecutive samples of audio data in the playback block;

3   identifying consecutive samples with minimal variation in a parameter of their data;

4   and

5   adjusting the number of samples in the identified consecutive samples.

1   9.   The method of claim 8 wherein adjusting the number of samples comprises removing

2   a sample from the identified consecutive samples.

1   10.   The method of claim 8 wherein adjusting the number of samples comprises adding a

2   sample to the identified consecutive samples.

1   11.   A computer program, residing on a computer-readable medium, for dynamically

2   managing latency in a real-time electronic communication, comprising instructions for

3   causing a computer to:

4   measure a communication delay arising from a receiving data buffer;

5   determine a latency adjustment necessary to adjust the size of the communication

6   delay within a predetermined range;

7   determine an optimal range for a size of the communication delay; and

8   modify the number of samples of a playback data block passing through the receiving

9   data buffer.

1   12.   The computer program of claim 11 further comprising instructions for causing a

2   computer to modify the number of samples without introducing audible artifacts.

1   13.   The computer program of claim 11 wherein instructions for causing a computer to

2   measure a communication delay comprise instructions for causing a computer to measure an

3   instantaneous communication delay associated with the receiving data buffer.

1   14.   The computer program of claim 13 wherein instructions for causing a computer to

2   measure the communication delay comprise instructions for causing the computer to:

3   measure the instantaneous communication delay associated with the receiving data

4   buffer two or more times; and

5   average the measurements.

1   15.   The computer program of claim 11 wherein the real-time electronic communication

2   includes an audio communication.

1   16.   The computer program of claim 11 further comprising instructions for causing a

2   computer to determine receiving data buffer delay upper and lower bounds.

1   17.   The computer program of claim 11 wherein instructions for causing a computer to

2   modify the number of samples further comprise instructions for causing a computer to

3   perform heuristic resampling of a playback block.

1   18.   The computer program of claim 17 wherein instructions for causing a computer to

2   perform heuristic resampling comprise instructions for causing a computer to:

3   analyze multiple consecutive samples of audio data in the playback block;

4   identify consecutive samples with minimal variation in a parameter of their data; and

5   adjust the number of samples in the identified consecutive samples.

1   19.   The computer program of claim 18 wherein adjusting the number of samples

2   comprises removing a sample from the identified consecutive samples.

1   20.   The computer program of claim 18 wherein adjusting the number of samples

2   comprises adding a sample to the identified consecutive samples.

4   21.   A computer system running programmed processes comprising a process

5   for dynamically managing latency in a real-time electronic communication, which process

6   causes the computer system to:

7   measure a communication delay arising from a receiving data buffer;

8   determine a latency adjustment necessary to adjust the size of the communication

9   delay to within a predetermined range;

10   determine an optimal range for a size of the communication delay based on the

11 measured communication delay; and

12   modify the number of samples in a playback data block passing through the receiving

13 data buffer based on the measured communication delay and based on the optimal range for

14 the size of the communication delay.

1   22.   The computer system of claim 21 wherein the number of samples is modified without

2   introducing audible artifacts.

1   23.   The computer system of claim 21 wherein measuring the communication delay

2   comprises measuring an instantaneous communication delay associated with the receiving

3   data buffer.

1   24.   The computer system of claim 23 wherein measuring the communication delay

2   comprises:

3   measuring the instantaneous communication delay associated with the receiving data

4   buffer two or more times; and

5   averaging the measurements.

1   25.   The computer system of claim 21 wherein the real-time electronic communication

2   includes an audio communication.

1 26.   The computer system of claim 21 wherein the process for dynamically managing
2 latency further causes the computer system to determine receiving data buffer delay upper
3 and lower bounds.

1 27.   The computer system of claim 21 wherein modifying the number of samples
2 comprises performing heuristic resampling of a playback block.

1 28.   The computer system of claim 27 wherein performing heuristic resampling
2 comprises:
3   analyzing multiple consecutive samples of audio data in the playback block;
4   identifying consecutive samples with minimal variation in a parameter of their data;
5 and
6   adjusting the number of samples in the identified consecutive samples.

1 29.   The computer system of claim 28 wherein adjusting the number of samples comprises
2 removing a sample from the identified consecutive samples.

1 30.   The computer system of claim 28 wherein adjusting the number of samples comprises
2 adding a sample to the identified consecutive samples.